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BEFORE THE
POSTAL REGULATORY COMMISSION
WASHINGTON, D.C. 20268–0001

PERIODIC REPORTING (PROPOSAL SIX)	Docket No. RM2020-13

RESPONSES OF THE UNITED STATES POSTAL SERVICE
TO QUESTIONS 1-4 OF CHAIRMAN'S INFORMATION REQUEST NO. 4
(November 19, 2020)

The United States Postal Service hereby provides its responses to the above listed questions of Chairman's Information Request No. 4, issued November 12, 2020. The questions are stated verbatim and followed by the response.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorney:

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1. Please refer to Rule 39 C.F.R. Section 3050.60(f) Report for FY 2019 (Summary Descriptions), July 1, 2020 (FY19 Summary Descriptions), Word file: "CS03-19.docx." The Postal Service states "[di]stribution operations at [Management Operating Data System (MODS)] mail processing facilities are partitioned into eleven cost pools, reflecting various manual, mechanized and automated sorting activities," including Delivery Barcode Sorter (DBCS), Automatic Flat Sorting Machine 100 (AFSM100) and Flat Sequencing System (FSS) cost pools. FY19 Summary Descriptions at 3-4, 3-5.

a. Please provide the FY 2019 accrued costs and volume-variable costs (calculated using current and proposed variabilities) for each of the three referenced above cost pools.

b. Please list the MODS or other operation codes for activities that make up each of the three referenced above costs pools, and for which the accrued costs are calculated.

RESPONSE:

a. FY2019 accrued costs and volume-variable costs under current methodology are provided in Docket No. ACR2019, USPS-FY19-7, file "USPS-FY19-7 part1.xlsx," worksheet "Cost Pool Summary Table1- links." Total (accrued) costs, mail processing costs (excluding costs associated with "migrated" IOCS tallies), and volume-variable costs under both current and proposed methodology are provided in the workbook ChIR4.Q1.xlsx attached to this response electronically. Note that Proposal Six would apply the econometric FSS variability to both the MODS and NDC FSS cost pools.

b. The MODS operation codes for the cost pools in part (a) are provided in file USPS-FY19-7 part1.xlsx, worksheets "I-2B. CPool Hrs by Ops&LDC-MODS" (for MODS plant DBCS, AFSM100, and FSS cost pools) and "I-3b. CPool Hrs by Ops&LDC-NDCs" (for the NDC FSS cost pool). Please see also the responses

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in this docket to Chairman's Information Request No. 3, questions 5(a), 5(c), and 6(d) for discussion of the coverage of the cost pools by the Proposal Six operation groups.

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2. Please refer to the Variability Report that provides variability estimates for DBCS, AFSM100, and FSS machine operations that are derived from runtime and workhour regression models based on the data for FY 2016-FY 2019 time period that "serves as the sample period for the main estimation results." Variability Report at 21-23.

a. Please discuss whether for any of the three referenced above machine operations, the Postal Service considered estimating separate variabilities for volume peak and non-peak time periods (months). With your response, please include program and output files, if applicable, and explain why such estimation was rejected or even not considered.

b. If in question 2.a. the Postal Service indicated that it did not consider estimating separate variabilities for any or all referenced above machine operations, please discuss whether the variabilities estimated separately for volume peak and non-peak time periods would be materially different from the respective variabilities estimated in Proposal Six, and explain why.

RESPONSE:

a. The Postal Service did not consider estimating separate peak and non-peak variabilities. Current methodology does not provide separate peak and non-peak accrued costs or distribution keys to associate with peak and non-peak variabilities. Peak variabilities may need to be estimated using relatively limited numbers of observations from peak months, and peak distribution keys may likewise need to be developed from relatively small subsets of IOCS tallies, making it unclear whether a peak/non-peak approach would improve cost data quality relative to current methodology. Seasonal effects, including peak/non-peak effects, affecting the level of workhours via the monthly dummy variables—but not the elasticities—are statistically significant.

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b. It is an empirical question as to whether peak and non-peak variabilities would differ materially. As a preliminary indication of the magnitude of such effects, the Postal Service estimated a model without lagged TPF, interacting a peak-period dummy variable $D_{p(t)}$ with the natural log of TPF:

$$\ln Workhours_{it} = a_i + b_1 \ln TPF_{it} + d_1 \ln TPF_{it} \cdot D_{p(t)} + c \cdot D_{m(t)} + e_{it}$$

In this case, the coefficient b_1 on the natural log of TPF would be interpreted as the non-peak elasticity, and the sum of b_1 and the coefficient d_1 on the interaction term would represent the peak elasticity. The models use a December peak for DBCS operations and an October-November peak for AFSM100 and FSS operations. The peak/non-peak results are compared to results from this model with current-period TPF and seasonal dummy variables, but without the interaction term. While the peak period interaction term for the DBCS operation group was statistically significant, the estimated effect on the elasticity is small (less than 0.02). The peak period interaction effects for the AFSM100 and FSS operation groups are small and statistically insignificant. Elasticities from this model are provided in the table below. A Stata program listing and related output log file are attached to this response electronically.

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Initial Analysis of Peak/Non-Peak Elasticities for Proposal Six Operations
FY2016-2019 Sample Period, 5% Tails Screen

Operation		Elasticity, No Peak Interaction (1)	Non-Peak Elasticity (2)	Peak Elasticity (3)
DBCS	Estimate	0.927	0.922	0.940*
	S.E.	0.022	0.022	0.021
AFSM 100	Estimate	0.827	0.827	0.824
	S.E.	0.082	0.082	0.08
FSS	Estimate	0.742	0.741	0.746
	S.E.	0.061	0.061	0.063

* Indicates peak season interaction term has p-value < 0.05

Source:
(1): USPS-RM2020-13-1, results_seasonal.xlsx (Current TPF Only)
(2)-(3): results_seasonal_peak.txt

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3. Please refer to the Response to CHIR No. 1 that states "[m]odel specifications including only the first and only the twelfth lags [of total pieces fed (TPF)] also were considered." Response to CHIR No. 1, question 2.b. Please also refer to the Response to CHIR No. 2 that states "[i]n distributed lag models … the sum of the coefficients on the contemporaneous and lagged TPF would represent the longer-run elasticity." Response to CHIR No. 2, question 2 with the reference to the paper by Badi H. Baltagi, *Econometrics,* Springer-Verlag, 2008 (Baltagi Paper) at 129.

a. Please confirm that, in the Baltagi Paper, the long-run effect of a unit change of an explanatory variable X on dependent variable Y is calculated as the sum of the coefficients β0, β1, …βs, where these coefficients correspond to consecutive lags of an independent variable X. If not confirmed, please explain how the long-run effect is calculated in the Baltagi Paper.

b. If question 3.a. is confirmed, please explain why the longer-run elasticity can be calculated using the sum of the coefficients on the contemporaneous and non-consecutive lagged TPF variables (*e.g.,* the first and twelfth lags), as it is done in Proposal Six, and provide the applicable references.

c. Please explain the difference in interpretation, if any, between the long-run elasticity calculated by summing the coefficients on the contemporaneous and consecutively lagged TPF variables (*e.g.,* the first through the twelfth lag) and the long-run elasticity calculated in Proposal Six.

d. Please confirm that for Proposal Six, the Postal Service did not consider model specifications that employed the consecutively lagged TPF, such as the first through twelfth lags of TPF. If confirmed, please explain why. If not confirmed, please explain why these models specifications were rejected and provide program and output files, if applicable.

RESPONSE:

a. Confirmed. Note that the values of the lag coefficients are not specified and may take on any values. In principle, at least some of the lag coefficients may be zero (or not different from zero by statistically significant amounts).

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b. The Proposal Six method is a special case of the calculation in the Baltagi paper with twelve lags, but where the coefficients on the second through eleventh lags are constrained to zero.

c. There is no conceptual difference in the interpretation of the elasticities. The practical issue is whether reliable estimates of all of the lagged TPF effects can be estimated if the entire set of lags is included in the model. As discussed in the response in this docket to Chairman's Information Request No. 2, question 4, consecutive lags of (natural log) TPF are highly correlated, though the adverse effects of multicollinearity on the estimates for the Proposal Six models are limited due in part to the restricted set of lags included in the models. Adding additional lags is likely to exacerbate the multicollinearity issues that the Commission inquired about in ChIR No. 2.

d. Confirmed. The main reason the Postal Service did not examine models with the full set of lags is due to the likelihood that such a specification would encounter multicollinearity issues leading to statistically unreliable estimates of the coefficients on many or most of the lagged TPF variables. Additionally, there is little theoretical or operational basis for including the second through eleventh lags, compared to the first and twelfth lags. Please see the Variability Report at 20.

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4. Please refer to the Response to CHIR No. 2 that states "[a] preferred econometric approach to addressing COVID-related distribution workload impacts may not involve changing the sample period at all, but rather might involve introducing recession-related control variables or the like." Response to CHIR No. 2, question 6. Please also refer to Docket No. R2013-11, Further Statement of Thomas E. Thress on Behalf of the United States Postal Service, September 26, 2013 (Thress Statement), Technical Appendix II.

a. Please provide specific examples of recession-related control variables that might be included in the econometric model used in Proposal Six to address COVID-related distribution workload impacts.

b. Please discuss whether any variables that Thress Statement characterized as "[e]xigent [f]actors associated with the Great Recession" could be considered for inclusion into Proposal Six econometric model to address the impact of COVID-19. Thress Statement at II-4 through II-18.

c. Please discuss whether and how the inclusion of "recession-related control variables or the like" into the econometric model used in Proposal Six would affect the estimated variabilities, and explain why. Response to CHIR No. 2, question 6.

RESPONSE:

a. Examples of recession-related control variables would be dummy variables indicating the months covered by NBER recession dates, dummy variables indicating the start months of recessions, trend variables starting with a recession date, and/or nonlinear intervention variables (i.e., pulse and step functions) similar to those employed in the Postal Service's demand models.

b. The Thress statement describes trend and intervention variables conceptually similar to the examples referenced in part (a), which could be considered for inclusion in the Proposal Six econometric models to model COVID-related recession effects. The Thress statement also describes a number of macroeconomic variables that are used to model product-level demands. It is

unclear whether macroeconomic variables that may contribute to determining demand for particular mail products would be appropriate explanatory variables for workhours in mail processing operations. Among other considerations, MODS mail processing volumes include pieces from multiple products, and product mixes in mail processing may vary over time and facilities.

c. The inclusion of recession-related control variables could affect the estimated variabilities to the extent that those variables would have explanatory value for mail processing workhours in recession-affected time periods. The potential mechanism for the effect would be omitted-variable bias. The existence and magnitude of such effects would be an empirical matter.